

What is claimed is:

1. An ion implanter electrode component for use in an ion implanter
5 having an electrically conductive electrode support frame and adapted to generate an ion beam, comprising:
an electrically conductive insert member adapted to be inserted into said ion implanter support frame, said insert member comprising an electrode body portion defining an aperture, said insert member further comprising a plurality of alignment
10 pins positioned to engage said ion implanter support frame and to align said aperture in an aligned position relative to said ion implanter support frame wherein said electrode body portion is positioned to receive said ion beam passing through said aperture, said insert member further comprising a plurality of retention flanges adapted to engage said ion implanter support frame and to retain said electrode
15 body portion in said aligned position within said ion implanter support frame and electrically coupled to said support frame.
2. The component of claim 1 wherein each alignment pin has a cylindrical pin body portion which defines a cylindrical outer surface adapted to engage said ion implanter support frame.
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3. The component of claim 1 wherein each alignment pin has a pin body portion which defines an outer surface adapted to engage said ion implanter support frame, and a retention cap having a width wider than the width of said pin body portion wherein each alignment pin retention cap defines a retention flange.
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4. The component of claim 1 wherein the alignment pins, retention flanges and the electrode body portion are integrally formed wherein the insert member is a one-piece member.
- 30 5. The component of claim 1 wherein said support frame has a flat face portion and said insert member has a flat face portion and wherein said insert member flat face portion is positioned engaged face to face with said support frame flat face portion in said aligned and retained position.

6. An ion implanter electrode for use in an ion implanter adapted to generate an ion beam, comprising:

an electrically conductive electrode support frame which defines an aperture having first and second alignment surfaces wherein said first alignment surface is

5 groove-shaped; and

an electrically conductive insert member adapted to be inserted into said ion implanter support frame, said insert member comprising an electrode body portion defining an aperture and adapted to be inserted into said support frame aperture, said insert member further comprising a first alignment pin positioned to engage said

10 ion implanter support frame groove-shaped first alignment surface and a second alignment pin position to engage said ion implanter support frame second alignment surface to align said aperture in an aligned position relative to said ion implanter support frame wherein said electrode body portion is positioned to receive said ion beam passing through said aperture, said insert member further comprising a

15 plurality of retention flanges adapted to engage said ion implanter support frame and to retain said electrode body portion in said aligned position within said ion implanter support frame and electrically coupled to said support frame.

7. The electrode of claim 6 wherein each alignment pin has a cylindrical body portion which defines a cylindrical outer surface adapted to engage said ion implanter support frame.

8. The electrode of claim 6 wherein each alignment pin has a body portion which defines an outer surface adapted to engage said ion implanter support frame, and a retention cap having a width wider than the width of said pin body portion wherein each alignment pin retention cap defines a retention flange.

9. The electrode of claim 6 wherein the alignment pins, retention flanges and the electrode body portion are integrally formed so that the insert member is a one-piece member.

10. The electrode of claim 6 wherein said support frame has a flat face portion and said insert member has a flat face portion and wherein said insert member flat face portion is positioned engaged face to face with said support frame flat face portion in said aligned and retained position.

11. The electrode of claim 6 further comprising a spring positioned between said insert member and said support frame to bias said insert member in said aligned and retained position.

5 12. A method of assembling an ion implanter electrode for use in an ion implanter adapted to generate an ion beam, comprising:

10 inserting an electrically conductive insert member into an electrically conductive electrode support frame which defines an aperture having first and second alignment surfaces wherein said first alignment surface is groove-shaped, wherein said insert member comprises an electrode body portion defining an aperture;

15 engaging a first alignment pin of said insert member with said ion implanter support frame groove-shaped first alignment surface;

20 engaging a second alignment pin of said insert member with said ion implanter support frame second alignment surface to align said insert member aperture in an aligned position relative to said ion implanter support frame wherein said electrode body portion is positioned to receive said ion beam passing through said aperture; and

25 engaging a plurality of retention flanges of said insert member with said ion implanter support frame to retain said electrode body portion in said aligned position relative to said ion implanter support frame and electrically coupled to said support frame.

13. The method of claim 12 wherein each alignment pin has a cylindrical body portion which defines a cylindrical outer surface adapted to engage an alignment surface of said ion implanter support frame.

14. The method of claim 12 wherein each alignment pin has a body portion which defines an outer surface adapted to engage an alignment surface of said ion implanter support frame, and a retention cap having a width wider than the width of said pin body portion wherein each alignment pin retention cap defines a retention flange.

15. The method of claim 12 wherein the alignment pins, retention flanges and the electrode body portion are integrally formed so that the insert member is a one-piece member.

16. The method of claim 12 wherein said inserting includes engaging an insert member flat face portion face to face with a support frame flat face portion.

5 17. The method of claim 12 further comprising positioning a spring between said insert member and said support frame to bias said insert member in said aligned and retained position.

10 18. An ion implanter electrode component for use in an ion implanter having an electrically conductive electrode support frame and adapted to generate an ion beam, comprising:

15 a one-piece electrically conductive insert member adapted to be inserted into said ion implanter support frame, said insert member comprising an integral electrode body portion defining an aperture, said insert member further comprising a plurality of integral alignment pins wherein each alignment pin has a cylindrical pin body portion which defines a cylindrical outer surface adapted to engage said ion implanter support frame and to align said aperture in an aligned position relative to said ion implanter support frame wherein said electrode body portion is positioned to receive said ion beam passing through said aperture, wherein each alignment pin
20 further has a retention cap having a width wider than the width of said pin body portion wherein each alignment pin retention cap defines a retention flange adapted to engage said ion implanter support frame and to retain said electrode body portion in said aligned position within said ion implanter support frame and electrically coupled to said support frame, and wherein said support frame has a flat face portion
25 and said insert member has a flat face portion and wherein said insert member flat face portion is positioned engaged face to face with said support frame flat face portion in said aligned and retained position.